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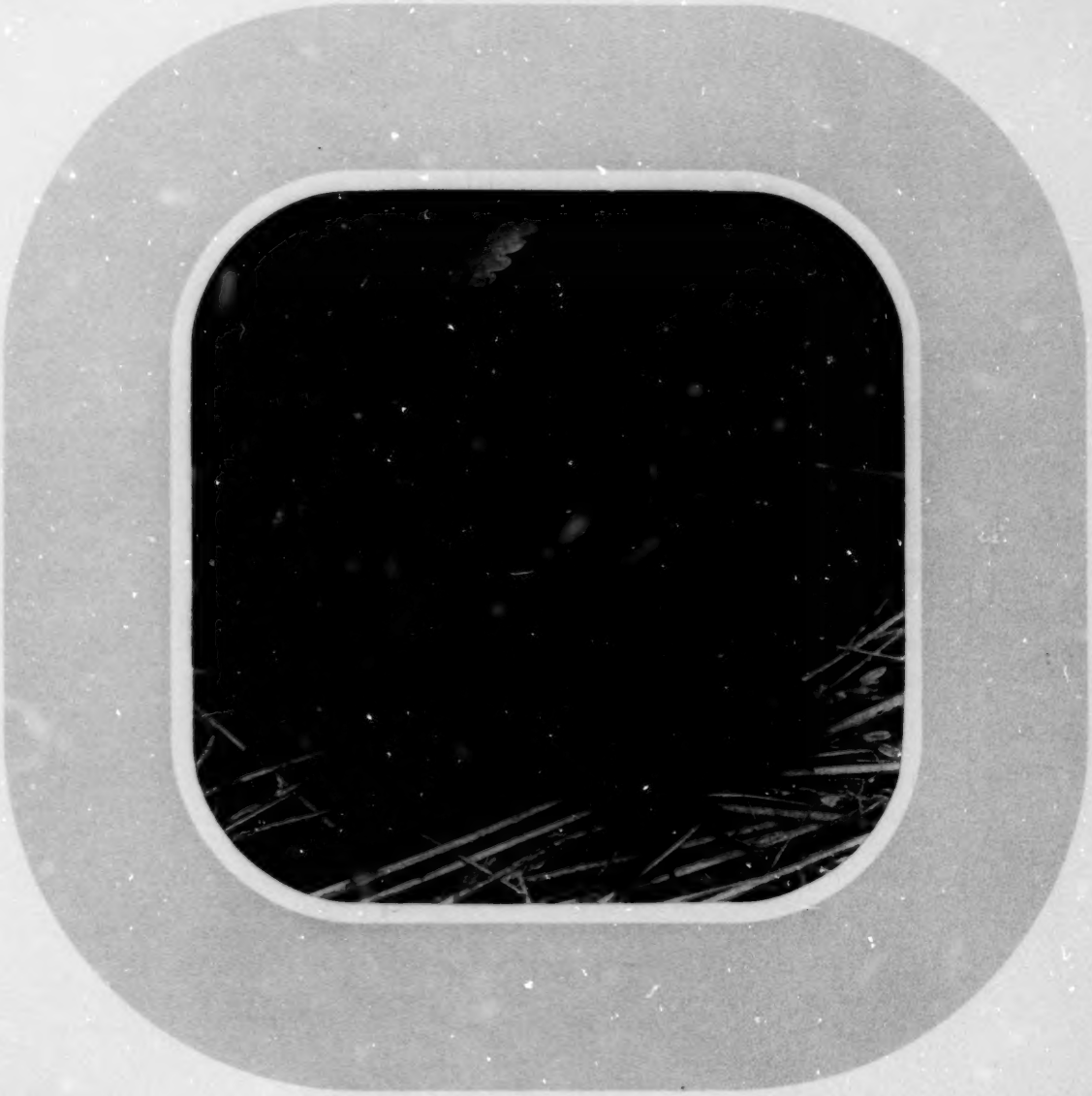
STRAWBERRY PRODUCTION COSTS IN ONTARIO



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STRAWBERRY PRODUCTION COSTS IN ONTARIO

by

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SUMMARY

Interest in strawberry production has increased in recent years due to improved cultural technology, the success of Pick-Your-Own operations and the possible revival of the processing industry.

Strawberry production has spread from the traditional growing areas in the Niagara Peninsula and Norfolk County to other areas of Ontario. Nearly 4,000 acres were devoted to strawberry production in 1982, having a total farm value of $11 million. An additional $15 million worth of fresh and frozen strawberries were imported into Ontario to satisfy demand.

A study was undertaken in 1981, to examine management practices and costs associated with establishing a strawberry planting. In 1982, a follow-up cost study into maintaining and harvesting existing plantings was undertaken . Areas covered in the study included Niagara and Norfolk as well as those growing areas east of Toronto and the Ottawa Valley. The study began with 24 cooperating growers. Twenty-two growers successfully completed detailed records in 1981 and nineteen reported in 1982.

The average total cost to establish one acre of strawberries was $2,027 in 1981. Cooperating growers reported they normally obtained four fruit bearing years from each established planting before it was plowed down and replaced. Hence the cost of establishment was spread over four production years.

Costs to maintain and harvest the 1981 fruit bearing areas were broken down into pre-harvest, harvest, renovating and overhead cost segments.

Harvesting costs were analyzed for both commercial harvesting and the Pick-Your-Own method.

The cost of harvesting averaged 35.7 cents per quart for the eight growers with commercial harvesting operations and 10.3 cents per quart for the seven growers who used the Pick-Your-Own method exclusively.

Based on a rotation that has four fruit-bearing years, total production costs, including establishment, averaged 65.7 cents per quart for commercially harvested crops and 40.3 cents for Pick-Your-Own operations.

During 1982, the average harvested yield reported by all cooperating growers was 5,954 quarts per acre compared to a provincial average of 5,100 quarts. Niagara cooperators averaged the highest yield at 6,277 quarts per acre. Niagara cooperators also had higher than average costs. These cost differences were due to higher land values, higher labor costs and the need for chemical nematode control.

THE STRAWBERRY INDUSTRY IN ONTARIO

Strawberries are an important source of income for many Ontario growers, grossing about $10 million annually. Strawberries rank fourth among the fruit crops in gross returns to Ontario growers, and are exceeded by apples, grapes, and peaches.

Since the mid-70's, the area devoted to strawberries has shown a steady increase and at present totals nearly 4,000 acres (Table 1). Fifteen years ago, the crop was concentrated in the Niagara Peninsula and Norfolk County. Today, with the rapid rise of Pick-Your-Own farming, there is substantial acreage in all areas of the province.

Table 1.--Strawberry Area, Production and Farm Value, Ontario, 1968-1982

Year	Area		Marketed Production	Farm Value
	Bearing	Non-Bearing		
	- acres -		'000 quarts	$'000
1982	3,283	695	16,640	10,769
1981	3,130	760	18,449	9,984
1980	2,889	715	18,740	10,634
1979	2,762	849	17,485	9,031
1978	2,681	712	17,543	8,654
1977	2,163	619	14,148	7,196
1976	2,034	638	11,806	5,762
1975	2,014	695	10,595	4,986
1974	2,119	795	8,828	3,737
1973	2,172	784	8,788	3,334
1972	2,192	977	9,189	2,985
1971	2,253	988	11,215	3,067
1970	2,283	1,086	11,322	3,345
1969	2,245	868	9,837	2,961
1968	2,193	1,028	8,841	2,831
5-year average:				
1978-82	2,949	746	17,771	9,814
1973-77	2,100	706	10,833	5,003
1968-72	2,233	989	10,081	3,038

Source: Agricultural Statistics for Ontario, Publication 20 (Toronto: Ontario Ministry of Agriculture and Food).

Table 2.--Yield, Price and Gross Returns for Strawberries, Ontario, 1968-1982

Year	Yield per Bearing Acre	Farm Value per Quart	Gross Return per Bearing Acre
	quarts	cents	dollars
1982	5,069	64.7	3,280
1981	5,894	54.1	3,190
1980	6,487	56.7	3,681
1979	6,331	51.6	3,270
1978	6,543	49.3	3,228
1977	6,541	50.9	3,327
1976	5,804	48.8	2,833
1975	5,261	47.1	2,476
1974	4,166	42.3	1,764
1973	4,046	37.9	1,535
1972	4,192	32.5	1,362
1971	4,978	27.3	1,361
1970	4,959	29.5	1,465
1969	4,382	30.1	1,319
1968	4,031	32.0	1,291
5-year average:			
1978-82	6,026	55.2	3,328
1973-77	5,159	46.2	2,382
1968-72	4,515	30.1	1,361

Source: Agricultural Statistics for Ontario, Publication 20, (Toronto: Ontario Ministry of Agriculture and Food).

During 1968-1972, non-bearing acreage of strawberries was 44 percent of bearing acreage. With the introduction of better herbicides, growers have been able to maintain their fields for more years. During 1968-1982, the proportion of non-bearing to bearing area decreased steadily (Table 1).

Yields have also shown a gradual increase over the last fifteen years. Improved cultural practices, including weed control, and the introduction of new varieties have helped to increase yields from an average of 4,500 quarts per acre during 1968-1972 to an average of 6,000 quarts during 1978-1982 (Table 2).

The volume of fresh and frozen strawberries imported into Ontario is greater than the volume grown in the province. In 1982, more than 23 million pounds of strawberries worth $15 million came into Ontario (Table 3). It was at this time that a program was initiated to reestablish a strawberry processing industry. A Processing Strawberry Research Corporation composed of growers, processors, machinery representatives and researchers was formed. The objective was to expand the strawberry production and processing industries so that 80 percent of frozen imports could be replaced by domestic products within the next decade. Solid-bed plantings and mechanical harvesting of the fruit are being studied as possible ways to meet this objective.

Table 3.--Imports of Fresh and Frozen Strawberries, Ontario, 1968-1982

Year	Fresh		Frozen	
	'000 lb.	$'000	'000 lb.	$'000
1982	18,757	11,651	4,720	3,278
1981	18,789	10,473	5,240	3,066
1980	15,005	7,879	5,690	2,521
1979	12,547	5,979	9,567	4,440
1978	12,391	5,076	9,007	3,146
1977	11,213	4,123	7,480	2,713
1976	11,161	3,915	8,559	3,172
1975	9,634	3,138	7,116	1,950
1974	9,873	2,929	9,680	2,862
1973	8,295	2,470	7,068	1,884
1972	6,812	1,726	5,935	1,146
1971	6,864	1,691	5,625	940
1970	6,055	1,535	5,214	927
1969	6,198	1,617	5,537	1,072
1968	5,574	1,386	4,183	833

Source: Statistics Canada, External Trade Division.

The per capita consumption of strawberries in Canada is about four pounds and has increased gradually during the last 20 years (Table 4). If future increases in the per capita consumption came from greater domestic production then the entire industry would benefit.

The popularity and spread of Pick-Your-Own farms has made fresh strawberries available to a larger number of people living in Ontario and if the strawberry processing industry is revived, the future of the strawberry industry in the province looks very promising.

STUDY BACKGROUND

PURPOSE

There has been an increasing need for current cost of production information and budget data by growers, potential growers, researchers and others involved with the strawberry industry in Ontario. Also, there has been renewed interest in producing strawberries for the processing market as well as continued interest in producing strawberries for the fresh market. To meet the need for cost information, the Soils and Crops Branch (currently the Plant Industry Branch) of the Ministry of Agriculture and Food and the Ontario Small Fruit Growers' Association made a formal request to the Economics Branch for a cost study of strawberry production in the province.

Table 4.--Per Capita Consumption of Strawberries, Canada, 1960-1981

Year	Fresh	Frozen	Canned	Total
		- kilograms -		
1981	1.48	0.44	0.02	1.94
1980	1.44	0.51	0.03	1.98
1979	1.44	0.49	0.04	1.97
1978	1.41	0.49	0.03	1.93
1977	1.20	0.51	0.03	1.74
1976	1.12	0.52	0.02	1.66
1975	1.04	0.61	0.02	1.67
1974	0.92	0.55	0.02	1.49
1973	0.85	0.54	0.02	1.41
1972	0.82	0.55	0.02	1.39
1971	0.88	0.57	0.03	1.48
1970	0.77	0.57	0.03	1.37
1969	0.86	0.53	0.04	1.43
1968	0.86	0.47	0.05	1.38
1967	0.75	0.59	0.04	1.38
1966	0.73	0.47	0.05	1.25
1965	0.49	0.60	0.04	1.13
1964	0.66	0.45	0.05	1.16
1963	0.67	0.48	0.05	1.20
1962	0.66	0.42	0.04	1.12
1961	0.80	0.39	0.05	1.24
1960	0.77	0.34	0.05	1.16

Source: Statistics Canada, Catalogue No. 32-229.

In response to this request, a study was carried out in 1981 and 1982. It had three main objectives:

1. To determine the cost of establishing strawberries in different areas of Ontario;

2. To obtain information on costs, yields and returns of fruit-bearing acres; and

3. To obtain information on physical crop inputs as well as cultural and marketing practices in Ontario.

APPROACH

The study began in the spring of 1981 and was conducted in two parts. The first part dealt with establishment costs only. The second phase in 1982, dealt with the fruit-bearing acres.

A sample of cooperating growers was selected in four areas:

1. The Regional Municipality of Niagara;

2. Norfolk county;

3. The Regional Municipality of Durham and Prince Edward county in central Ontario; and

4. The Regional Municipality of Ottawa-Carleton and Glengarry county in eastern Ontario.

Six cooperating growers were selected in each of the four areas. Of the 24 growers selected, 22 successfully completed detailed records on establishment practices and costs in 1981, while 19 kept records on production, harvesting, marketing operations and renovation costs in 1982 with sufficient accuracy to be analyzed.

METHODS USED IN DETERMINING COSTS

Each cooperating grower was visited in the spring of 1981 to discuss the record keeping requirements of the study. Cooperators were given specially designed record sheets in 1981 and again in 1982. Also records that growers kept in the normal course of their business were used as much as possible. A personal follow-up call was made in the fall of 1981 and again in 1982 to complete the collection of data.

Below is a brief description of how each input item was treated.

LABOR

Growers recorded all the hours of labor needed in field preparation, planting, applying materials, mulching, harvesting, renovating and other operations performed during the two years of study. Any work done in 1980 for field preparation was estimated and recorded as well.

Standard hourly rates of $5.00 in 1980, $6.00 in 1981 and $6.25 in 1982 were used to determine the cost of the operator's own labor. Hired labor costs, including any employee benefits, were recorded from the growers' payroll records.

MACHINERY AND EQUIPMENT

Tractor and machine costs included depreciation, interest on investment, insurance, housing, repairs, maintenance, fuel and lubrication. If machines were used for other farm operations, costs were adjusted based on the proportion of use on the study crop.

The declining balance method of depreciation was used, and a 15 percent rate to powered and a 10 percent rate to nonpowered machines was applied. No depreciation was calculated for obsolete machines.

Cooperators recorded the price and the year of purchase for all machines not fully depreciated, as well as the estimated resale value for obsolete machines.

To calculate interest on machinery investment, it was assumed that the equity portion was 70 percent and the debt portion was 30 percent of the total depreciated value. For the two study years, interest on equity was calculated using the average interest rate paid by chartered banks on savings accounts. The interest on debt was based on the average prime rate plus 1.5 percent.

Insurance and housing for machinery was based on 1.5 percent of its purchase cost.

Because it is difficult to establish repair and maintenance costs for individual machines, hourly repair rates were obtained from the factsheet "Cost of Owning and Operating Farm Machines", Agdex 825, Ontario Ministry of Agriculture and Food.

Fuel costs were based on the cooperating growers' estimates of fuel consumption and the average fuel prices paid during each study year. The cost of oil, grease and filters was calculated at 15 percent of the fuel costs.

MATERIALS

The cost of purchasing and delivering all materials including plants, plant starter, chemicals, fertilizer, manure, containers, straw, etc., was the actual cost to the growers. Home grown straw was valued at market price.

LAND

Determining an annual cost for land use is a controversial part in any study of crop production economics. During the past two decades, purchasers of farmland have been willing to pay more for land than can be justified from agricultural production. The most important reason for this is that land has been considered a good hedge against inflation. Purchasers believe the speculative aspect of land ownership offers benefits above those received from crop production. For this reason the appropriate interest rate used in calculating the interest cost on land investment for crop production was the real interest rate, i.e. the current rate of interest adjusted for inflation.

In this study, interest on land investment was calculated as follows:

1. The value of land was based on recent sale values of bare land in the immediate area of cooperating farms.

2. The interest rate applied was the current lending rate discounted for the rate of inflation. In 1981 the interest rate was 3.5 percent and in 1982 it was 6.5 percent. For the purpose of this report, however, the interest rate was averaged between the two years.

When a field was left fallow in 1980 so it could be used for planting in 1981, a full annual charge was calculated for land use during the fallow year. In cases where a crop was harvested in 1980 prior to field preparations for strawberries, a partial land charge was estimated for the strawberry crop. In each case, a municipal tax charge (net of rebate) was added to the interest cost to arrive at the land use cost.

Readers who use this report to budget a strawberry operation in the short-run may wish to replace the land use cost with a cost that more closely reflects their specific situation.

INTEREST ON OPERATING CAPITAL

Interest on operating capital was calculated from the time an expenditure was incurred until the time income was generated from strawberry sales. Operating capital includes the cost of materials, fuel, repairs, hired labor and any other cash cost item. The interest rate applied to operating capital is the prime lending rate plus 1 percent.

OTHER OVERHEAD

This category covers items such as utilities, accounting and administration costs, use of the farm automobile and general farm upkeep. The total cost of these items was estimated at $100 per acre of strawberries planted in 1981 and $100 per acre harvested in 1982. If growers could provide the exact amount of these expenses they were used rather than the $100 estimate.

OTHER COSTS

Varying amounts were spent on advertising by Pick-Your-Own operators. These costs were included in the analysis. A management allowance of 5 percent of estimated gross crop value was calculated for each cooperator in the 1982 production year.

PRODUCTION PRACTICES

ESTABLISHMENT

Good soil is one of the most important requirements for successful strawberry production. Strawberries can be grown in most parts of the province, including parts of northern Ontario. The selection and preparation of a suitable site however, is more important than climate. Cooperators on the study were aware of the importance of site selection, soil preparation and crop rotation.

Well drained, deep, fertile soils which are well supplied with organic matter are best suited for berry production. Good air and soil drainage are necessary and adequate soil moisture is essential for high yields. Access to a water supply for irrigation also should be considered before selecting a planting site. Irrigation can be used to provide optimum soil moisture for plant growth and fruit production as well as a means of protecting blossoms against spring frosts. Low lying fields or fields exposed to strong winds should be avoided.

Sixteen of the 22 cooperators who provided information on establishment costs began preparing the fields during the pre-plant year. In most cases, field preparations were directed at controlling weeds and building fertility. However, there was a large variation in operations performed and materials used. In the central and eastern areas it was a common practice to leave the field fallow during the pre-plant year. In Niagara and Norfolk where land costs are higher and other high value crops compete for the use of land, preparations took place after a crop was grown and harvested in 1980.

Table 5.--Nutrients Applied for Strawberry Establishment and Production, Ontario, 1981-82

	Nutrients Applied[a]		
	N	P_2O_5	K_2O
	- pounds per acre[b] -		
ALL AREAS			
Establishment:			
Fertilizer	93	96	107
Manure	39	18	45
Total	132	114	152
Renovation:			
Fertilizer	77	51	67
NIAGARA			
Establishment:			
Fertilizer	49	98	98
Manure	38	16	61
Total	87	114	159
Renovation:			
Fertilizer	80	55	55
NORFOLK			
Establishment:			
Fertilizer	81	146	160
Manure	42	17	74
Total	123	163	234
Renovation:			
Fertilizer	36	53	53
CENTRAL AND EASTERN AREA			
Establishment:			
Fertilizer	118	73	89
Manure	39	20	23
Total	157	93	112
Renovation:			
Fertilizer	82	63	72

[a]This does not include nutrients applied in plant starter solutions.

[b]The amounts of fertilizer shown are expressed as pounds per acre established in 1981 and per acre renovated following the 1982 harvest. The amounts of nutrients from manure are based on application rates reported by cooperating growers and nutrient availability estimates given in the Ontario Farm Management Handbook.

The use of herbicides in the pre-plant year was more common among cooperating growers in the eastern area than elsewhere. Two growers planted a green manure crop and ten applied manure during 1980. Three cooperators in the Niagara region applied a soil fumigant for control of nematodes during the fall prior to planting.

There was less variation in cultural practices among areas during the planting year than the pre-plant year. A mixed fertilizer was generally applied in the spring before planting followed by an application of nitrogen during the summer. Table 5 lists the actual amounts of nutrients applied.

Planting occurred in early spring as soon as fields could be cultivated. One- or two-row mechanical planters were used. A common planting system was the matted-row, which has a plant population of 5,000 to 5,500 plants per acre. In most cases a plant starter was used in the water applied with the planter. Some growers irrigated immediately after planting to prevent drying of the roots.

All growers applied herbicides during the planting year. Most growers applied a selective post-emergence spray in the early summer and again in the fall.

Eight of the 22 growers applied an insecticide one or more times during the summer to control strawberry leafroller.

Although it is a recommended practice to control blight, scorch and leafspot with one or two fungicide applications, only one cooperator reported this spray operation during the planting year.

Considerable hand labor was required for resetting plants, weeding, runner placement and blossom removal. Some of the planted area was irrigated during the spring and summer, but this was not a common practice among cooperators.

A widely accepted practice is the application of a straw mulch after the plants are dormant in late fall to protect against winter damage to roots and crowns. An application common in the central and eastern areas consisted of 150 to 200, 45-pound bales of wheatstraw per acre, while lower rates of application occurred in Niagara and Norfolk. Mechanical straw shredders were used for the larger areas.

PRODUCTION AND HARVESTING

When new growth starts in the spring, the straw is raked off the plants and left between the rows to provide a clean area for pickers to work.

A fungicide spray is applied early in the spring for the control of blight, scorch and leafspot. Beginning around May 1, a number of fungicide sprays applied at regular intervals are usually required to control fruit rot.

Insecticides are usually required to control or limit the strawberry clipper weevil, the tarnished plant bug and the spittle bug and mite.

The cooperating growers on this study averaged 4-1/2 spray applications until the end of harvest. They applied fungicides four times and insecticides 2-1/2 times. Insecticides and fungicides were combined in one application where possible. Those growers who owned irrigation equipment set up the systems in the spring to protect against frost damage to blossoms and to provide extra soil moisture before and during harvest. In a small number of cases a herbicide was applied in early spring or approximately two months before harvest.

Cooperating growers on the study used two kinds of harvesting systems which were the commercial[1] harvesting or the Pick-Your-Own (PYO) method. Under commercial harvesting, the grower supplies all the labor for picking, packing and hauling the produce to the final destination which is usually a wholesaler's receiving point. The grower bears the cost of containers such as quart boxes and master trays.

In Pick-Your-Own operations, customers do their own picking and supply their own containers. The grower provides labor in directing customers to picking areas, assigning rows to be picked, supervising picking and providing check-out services. Growers with large areas often provide tractors and wagons to transport customers to and from the fields.

Six growers on the study harvested their entire crop on a commercial basis as defined in this study. Seven operated PYO only, while the remaining six used a combination of both methods. The beginning of harvest varied with geographic location and varieties grown. Generally, berries were ready about mid-June and harvesting was completed in three weeks.

RENOVATING

Most strawberry plantings last more than one fruiting year. The acreage to be carried over to the next season must be renovated. This is begun immediately after harvest.

When renovating, fertilizer is applied, the foliage is mowed off and rows are narrowed by various means of cultivation.

It is customary to apply two herbicide sprays -- one soon after harvest and a second one after plants are dormant in late fall. Cooperating growers applied a mixed fertilizer and one or two herbicide sprays. A straw mulch was again applied in late fall.

Since it costs less to renovate an existing planting than to plant a new crop, good cultural practices and an effective renovation program are of utmost importance.

New technology such as more effective weed control, has made it possible to keep an established planting in production longer, thereby reducing the number of acres that have to be replaced each year. Table 6 shows that the proportion of non-bearing area has steadily decreased over the last 10 years.

Generally, growers on the study went on a four-year rotation. They replanted about one quarter and renovated three quarters of the fruit bearing area each year. However, expansion programs and the condition of individual patches will cause this simple rule of thumb to vary from year to year.

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[1] The term "commercial" is used to describe operations where the picking is done by the grower and usually with hired labor. The term was used by the cooperating growers and a more appropriate term is not available.

However, this does not mean that Pick-Your-Own operations are not commercial operations from a business point of view.

Table 6.—Strawberry Area, Ontario, 1972-1982

Year	Commercial Area		Non-Bearing as a Percentage of Bearing Area
	Bearing	Non-Bearing	
	- acres -		%
1982	3,283	695	21
1981	3,130	760	24
1980	2,889	715	25
1979	2,762	849	31
1978	2,681	712	27
1977	2,163	619	29
1976	2,034	638	31
1975	2,014	695	35
1974	2,119	795	38
1973	2,172	784	36
1972	2,192	977	45

Source: Seasonal Fruit and Vegetable Report Annual Summaries 1972-1982, (Toronto: Ontario Ministry of Agriculture and Food).

Cooperators reported that usually per acre yields reach a maximum during the second year of fruit bearing and then decline steadily.

STRAWBERRY PRODUCTION COSTS IN ONTARIO

In this report, strawberry production costs are discussed under three headings - establishment; production and harvesting; and renovating.

ESTABLISHMENT

All growers on the study incurred costs for labor, machinery, materials and land use during the planting year (see Table 7). The average size of planting was 4.8 acres.

Labor and tractor use averaged 88.2 and 23.5 hours per acre respectively. The number of labor and tractor hours were highest in Niagara and lowest in the central and eastern areas.

Operating costs averaged $1,282 per acre and ranged from $1,025 in Norfolk to $1,893 in Niagara. The largest operating cost was for materials. The largest single input cost item was the custom application of a soil fumigant for nematode control at $588 per acre in Niagara. The other operating costs were relatively uniform among the areas.

The average cost for plants was $242 per acre. Differences in plant costs were due to differences in the cost of transportation from the plant grower to the strawberry grower.

Table 7.—Strawberry Establishment Costs per Acre, Ontario, 1981

	All Areas	Niagara	Norfolk	Central & Eastern Areas
Number of cooperators	22	6	6	10
Acres planted per farm	4.8	4.0	3.8	5.8
Labor:		- hours per acre -		
Operator	20.2	36.2	28.4	10.4
Hired	68.0	76.1	67.2	65.1
Total	88.2	112.3	95.6	75.5
Tractor	23.5	35.4	23.0	19.0
OPERATING COSTS:		- dollars per acre -		
Hired labor	235	208	198	260
Tractor & machine (fuel, oil, repairs)	98	115	83	98
Custom work	11	46		0
Materials:				
Plants	242	235	191	265
Fertilizer	73	58	88	73
Manure	37	58	60	19
Fumigant	133	588	0	0
Herbicides	62	80	76	49
Insecticides	7	1	10	8
Plant starter	9	12	2	11
Straw	140	99	150	153
Other	5	0	0	9
Total	708	1,131	577	587
Interest on operating capital	230	393	167	188
TOTAL	1,282	1,893	1,025	1,133
FIXED COSTS:				
Operator labor	119	212	170	61
Tractor & machine (dep'n interest, insurance, housing)	241	247	182	261
Interest, land	271	725	147	134
Real estate taxes	14	21	12	13
Other overhead	100	100	100	100
TOTAL	745	1,305	611	569
TOTAL COST PER ACRE	2,027	3,198	1,636	1,702

There were significant differences in fixed costs because of varying interest costs on land investment. Land values were the highest in Niagara which was followed by Norfolk.

The interest cost on land investment shown in Table 7, represents the 1981 and the 1980 cost for cases where the land was occupied for all or part of the pre-plant year. Fixed costs were $745 per acre, and ranged from $569 in the central and eastern areas to just over $1,300 in Niagara.

Table 8.—Strawberry Pre-harvest Costs per Acre, Ontario, 1982

	All Areas	Niagara	Norfolk	Central & Eastern Areas
Number of cooperators	19	5	5	9
Bearing acres per farm	12.0	7.1	5.2	18.5
Labor:		- hours per acre -		
Operator	3.6	7.2	6.3	2.5
Hired	15.3	35.6	9.7	11.8
Total	18.9	42.8	16.0	14.3
Tractor	5.3	7.9	4.8	4.8
OPERATING COSTS:		- dollars per acre -		
Hired labor	55	107	31	48
Tractor & machine (fuel,oil,repairs)	52	56	37	54
Materials:				
Herbicides	9	27	0	7
Insecticides	30	28	24	31
Fungicides	91	48	42	107
Fertilizer	5	0	0	7
Total	135	103	66	152
Interest on operating capital	8	8	4	8
TOTAL	250	274	138	262
FIXED COSTS:				
Operator labor	23	45	39	15
Tractor & machine (dep'n interest, insurance, housing)	103	106	72	107
TOTAL	126	151	111	122
TOTAL COST PER ACRE	376	425	249	384

In this study, average total cost to establish one acre of strawberries was $2,027. In Niagara, the total cost was approximately $3,200. The major reason for the cost difference in the Niagara area was due to the use of soil fumigants to control nematodes and the higher cost of land.

PRODUCTION AND HARVESTING

The pre-harvest costs for the 19 cooperators who completed detailed records in 1982, is shown in Table 8. The average pre-harvest cost was $376 per acre. This included the cost of growing strawberries up to the harvest season but it did not include the land cost, management allowance or other overhead costs.

The average operating cost of $250 per acre was 2/3 of the total cost of $376. Materials which averaged $135 per acre were the largest single operating cost. Sprays were also a significant part of the total material cost. Labor in Niagara which totalled 42.8 hours per acre, was more than twice that of any other area. Tractor hours in Niagara averaged 7.9 hours per acre compared with 4.8 hours in

Table 9.--Strawberry Harvesting Costs per Acre, Ontario, 1982

	All Areas	Niagara	Norfolk	Central & Eastern Areas
Number of cooperators	19	5	5	9
Acres harvested per farm	12.0	7.1	5.2	18.5
Harvested commercially[a], %	33	77	43	21
Pick-Your-Own, %	67	23	57	79
Yield, quarts per acre	5,954	6,277	5,848	5,902
Labor:		- hours per acre -		
Operator	16.4	24.9	28.4	12.8
Hired	170.9	375.3	191.6	124.1
Total	187.3	400.2	220.0	136.9
Tractor	3.8	5.8	11.8	2.1
OPERATING COSTS:		- dollars per acre -		
Hired labor	624	904	599	568
Tractor & machine (fuel, oil, repairs)	41	44	52	39
Containers	246	631	327	150
TOTAL	911	1,579	978	757
FIXED COSTS:				
Operator labor	103	156	177	80
Tractor & machine (dep'n, interest, insurance, housing)	63	41	67	67
Advertising	102	10	15	136
TOTAL	268	207	259	283
TOTAL COST PER ACRE	1,179	1,786	1,237	1,040

[a]Percentages are based on total quarts produced.

the other areas. Smaller sized equipment and a higher proportion of work being done by hand may be the reason for this difference. Cooperators in Norfolk had the lowest pre-harvest costs. With the exception of the higher labor cost, Niagara cooperators had total pre-harvest costs comparable to cooperators in the central and eastern areas. On average, the use of fungicides was lower in Niagara and Norfolk than in the central and eastern areas where growers planted larger areas.

The 19 cooperating growers harvested an average of 12 acres. One-third of those acres were harvested commercially while two-thirds were PYO (Table 9). Niagara cooperators averaged just over 7 acres per farm and had the highest portion of the crop harvested commercially (77 percent). Five cooperating growers in Norfolk harvested 5.2 acres per farm. Forty-three percent of the total production was harvested commercially and 57 percent was PYO.

The largest area was grown by the nine cooperators in the central and eastern areas. They averaged 18.5 acres per farm. PYO was a widely used method in these areas and the nine cooperators harvested 79 percent of their total crop using this method.

Table 10.—Strawberry Harvesting Costs, Commercial Harvesting, Ontario, 1982

	All Areas	
Number of cooperators[a]	8	
Yield per acre[b], quarts	6,669	
Acres harvested per farm	6.5	
Labor, hours per acre:		
Operator	20	
Hired	493	
Total	513	
Estimated quantity harvested per worker-hour, quarts	13	
HARVESTING COSTS:	$ per acre	¢ per quart
Labor:		
Operator	125	1.9
Hired	1,407	21.1
Total	1,532	23.0
Tractor (oper. and fixed)	39	.6
Machines (oper. and fixed)	15	.2
Containers	791	11.9
TOTAL	2,377	35.7

[a]Three cooperators in Niagara, three in Norfolk, two in the Central and Eastern area.

[b]Average yield reported by eight cooperators with commercially harvested crops.

Harvesting costs consist of labor, tractor and machine, and container costs. The amount of these factors largely depend on the method of harvesting. PYO operations require the lowest labor inputs but have a high advertising cost. On the other hand, commercial harvesting has a high labor requirement and requires that the produce be delivered to the wholesaler. However, it does not require advertising to attract customers. Table 9 shows that costs were highest for growers who harvested the largest share of their crop commercially (Niagara). Of the 19 cooperating growers, six harvested the entire crop commercially, seven used PYO and six combined these methods. When growers used both methods it was difficult to assess acreage, yield and labor cost for each method. Nevertheless, accurate information was compiled on the harvest costs for eight commercial harvesting and the seven PYO operations.

The harvesting costs for commercial harvesting is shown on Table 10. Cooperators recorded the number of hours needed for supervising, picking, packing and transportation. However, since hired pickers were paid on a piecework basis, the hours recorded are an estimate only and may not have the same accuracy as other parts of the analysis.

The estimated number of hours for labor averaged more than 500 hours per acre and yields average 6,669 quarts per acre. This represents a harvesting rate of approximately 13 quarts per hour of labor.

Table 11.--Strawberry Harvesting Costs, Pick-Your-Own Harvesting, Ontario, 1982

	Two Areas	
Number of cooperators[a]	7	
Yield per acre[b], quarts	5,984	
Acres harvested per farm	13.8	
Labor, hours per acre:		
Operator	17.2	
Hired	71.5	
Total	88.7	
HARVESTING COSTS:	$ per acre	¢ per quart
Labor:		
Operator	107	1.8
Hired	280	4.7
Total	387	6.5
Tractor (oper. and fixed)	41	.7
Machines (oper. and fixed)	31	.5
Advertising	137	2.3
Other[c]	21	.3
TOTAL	617	10.3

[a]Two cooperators in Norfolk and five cooperators in the Central and Eastern area.

[b]Average yield reported by seven cooperators with PYO harvested acres.

[c]This cost represents a small quantity of containers supplied to customers.

The major costs per acre were -- labor $1,532, containers $791 and machinery $54. The total cost was $2,377. On a per quart basis, the harvesting cost was nearly 36 cents. Labor was 23 cents, containers were 12 cents and machinery was less than 1 cent per quart.

For PYO operations labor hours were fewer than 90 hours per acre compared with more than 500 hours for commercial harvesting. The total harvesting costs for PYO were $617 per acre and the yield was 5,984 quarts per acre. The cost per quart was 10.3 cents which is broken down with labor costing 6.5 cents, advertising 2.3 cents and machinery and other costs 1.5 cents.

Based on Tables 10 and 11, the difference in harvesting costs between the two methods is about 25 cents per quart.

The difference in yield between the two groups may be due to factors other than the method of harvesting. No conclusions can be drawn as to which method results in the largest harvested yield.

The average of the remaining fixed costs totalled $475 per acre (Table 12). Niagara had costs of $823 per acre which is more than twice that in the other areas. This is due to higher land values and a higher management allowance based on gross crop value per acre.

Table 12.--Cost of Land, Management and Other Overhead per Acre for Producing Strawberries, Ontario, 1982

	All Areas	Niagara	Norfolk	Central & Eastern Areas
Number of cooperators	19	5	5	9
Bearing acres per farm	12.0	7.1	5.2	18.5
COSTS		- dollars per acre -		
Interest, land	138	450	110	76
Real estate taxes	12	14	10	11
Management allowance	213	259	184	208
Other overhead	112	100	100	116
TOTAL	475	823	404	411

RENOVATING

Extensive renovation was undertaken by growers in the study. This included mowing tops, raking, applying fertilizer and herbicides, rotovating, row cultivating, hauling straw and applying a straw mulch. In some areas, such as Niagara, extensive hand-weeding took place. The costs per acre renovated are given in Table 13.

Labor averaged 32 hours per acre with a high of 100 hours per acre in Niagara. Tractor hours averaged 7.6 hours per acre for all areas.

The total operating costs averaged $461. Cooperating growers in Niagara had a higher fertilizer cost than growers in the other areas. The cost for straw was more than twice as high in the central and eastern areas than in the other two areas.

The total operating and fixed costs of renovation averaged $574 per acre and ranged from $435 in Norfolk to $800 in Niagara.

Most of the cooperating growers on this study planned their crop rotations around four fruit-bearing years. This means that every year, one quarter of the area is replanted, one quarter is plowed down, and three quarters of the harvested area is renovated. In this study the actual area planted in 1981 was somewhat greater than one quarter of the area harvested in 1982. The proportion of acres renovated was approximately four-fifths of the harvested acreage instead of three quarters. The most probable reason for this is that some growers were expanding their operations.

TOTAL COSTS

The total cost of producing strawberries includes the annual pre-harvest and harvest cost of the fruit-bearing area plus the cost of replanting and renovating which is necessary to maintain constant production. The costs shown in Table 14 are based on four harvesting years.

Table 13.--Strawberry Renovating Costs per Acre, Ontario, 1982

	All Areas	Niagara	Norfolk	Central & Eastern Areas
Number of cooperators	19	5	5	9
Acres renovated per farm	10.0	6.1	3.8	15.6
Hours per acre:				
Labor	32.3	100.9	27.4	18.1
Tractor	7.6	11.7	11.3	6.2
OPERATING COSTS:		- dollars per acre -		
Hired labor	95	282	45	62
Tractor & machine (fuel, oil, repairs)	54	63	70	51
Custom work	5	29	0	0
Materials:				
Fertilizer	60	123	35	49
Manure	6	0	0	8
Herbicides	30	45	288	27
Straw	163	74	85	192
Other	6	0	2	8
Total	265	242	150	284
Interest on operating capital	42	64	22	37
TOTAL	461	680	287	434
FIXED COSTS:				
Operator labor	28	38	74	20
Tractor & machine (dep'n interest, insurance, housing)	85	82	74	86
TOTAL	113	120	148	106
TOTAL COST PER ACRE	574	800	435	540

The cost per quart was calculated for the commercial and PYO harvesting methods. The average total production cost harvested commercially was 65.7 cents per quart. The lowest cost was in Norfolk at 59.4 cents and the highest was in Niagara at 77.9 cents. With the PYO method, the average cost was 40.3 cents and ranged from 34 cents per quart in Norfolk to 52.5 cents in Niagara.

The calculated costs per quart in Table 14 can be viewed as the breakeven price or the price a grower must receive to cover all costs of production. Most growers had good yields in 1982 with above average profits. Lower yields would bring about higher breakeven prices. For example, with a yield of 5,100 quarts per acre (the 1982 provincial average yield) and a cost structure similar to the average of the commercially harvested and PYO operations studied, the breakeven price would be 71 cents and 45 cents per quart, respectively.

Table 14.--Cost of Establishing, Growing, Harvesting and Renovating Strawberries per Acre, Ontario, 1982

	All Areas	Niagara	Norfolk	Central & Eastern Areas
COSTS:		- dollars per acre -		
Establishment[a] (1/4 of cost)	507	800	409	425
Pre-harvest	376	425	249	384
Land, management, other overhead	475	823	404	411
Renovating[a] (3/4 of cost)	430	600	326	405
Total (except harvesting)	1,788	2,648	1,388	1,625
		- quarts per acre -		
Yield[b]	5,954	6,277	5,848	5,902
COSTS:		- cents per quart -		
All costs except harvesting	30.0	42.2	23.7	27.5
Commercial harvesting	35.7	35.7	35.7	35.7
Total	65.7	77.9	59.4	63.2
All costs except harvesting	30.0	42.2	23.7	27.5
PYO harvesting	10.3	10.3	10.3	10.3
Total	40.3	52.5	34.0	37.8

[a]Cooperating growers normally averaged four harvesting years following the planting year. Hence, establishment costs were spread over four production years. Fields were renovated three times during the four year production cycle.

[b]Average 1982 yields reported by cooperators for all acreage under study in each area.

APPENDIX

Appendix Table 1.--Strawberry Establishment Costs per Hectare, Ontario, 1981

	All Areas	Niagara	Norfolk	Central & Eastern Areas
Number of cooperators	22	6	6	10
Hectares planted per farm	1.93	1.60	1.55	2.35
Labor:		- hours per hectare -		
Operator	49.9	89.5	70.2	25.7
Hired	168.0	188.0	166.0	160.9
Total	217.9	277.5	236.2	186.6
Tractor	58.1	87.5	56.8	46.9
OPERATING COSTS:		- dollars per hectare -		
Hired labor	580	515	488	643
Tractor & machine (fuel, oil, repairs)	241	284	205	241
Custom work	28	114	0	0
Materials:				
Plants	598	581	473	654
Fertilizer	180	144	217	181
Manure	91	144	147	48
Fumigant	330	1,454	0	0
Herbicides	153	198	187	122
Insecticides	17	2	26	20
Plant starter	23	28	6	28
Straw	346	244	371	376
Other	12	0	0	22
Total	1,750	2,795	1,427	1,451
Interest on operating capital	568	971	414	463
TOTAL	**3,167**	**4,679**	**2,534**	**2,798**
FIXED COSTS:				
Operator labor	294	524	419	150
Tractor & machine (dep'n interest, insurance, housing)	595	610	451	645
Interest, land	670	1,791	362	333
Real estate taxes	36	52	30	32
Other overhead	247	247	247	247
TOTAL	**1,842**	**3,224**	**1,509**	**1,407**
TOTAL COST PER HECTARE	**5,009**	**7,903**	**4,043**	**4,205**

Appendix Table 2.--Strawberry Pre-harvest Costs per Hectare, Ontario, 1982

	All Areas	Niagara	Norfolk	Central & Eastern Areas
Number of cooperators	19	5	5	9
Bearing area per farm	4.85	2.87	2.09	7.49
Labor		- hours per hectare -		
Operator	9	18	15	6
Hired	38	88	24	29
Total	47	106	39	35
Tractor	13	20	12	12
OPERATING COSTS:		- dollars per hectare -		
Hired labor	137	264	76	119
Tractor & machine (fuel, oil, repairs).	129	139	91	133
Materials:				
Herbicides	22	66	0	16
Insecticides	74	71	59	77
Fungicides	225	118	105	265
Fertilizer	12	0	0	17
Total	333	255	164	375
Interest on operating capital	19	20	10	21
TOTAL	618	678	341	647
FIXED COSTS:				
Operator labor	56	111	98	38
Tractor & machine (dep'n interest, insurance, housing)	255	262	177	265
TOTAL	311	373	275	302
TOTAL COST PER HECTARE	929	1,051	616	949

Appendix Table 3.--Strawberry Harvesting Costs, Commercial Harvesting, Ontario, 1982

	All Areas	
Number of cooperators[a]	8	
Yield per hectare[b], kilograms	9,344	
Hectares harvested per farm	2.62	
Labor, hours per hectare:		
Operator	50	
Hired	1,218	
Total	1,268	
Estimated quantity harvested per worker-hour, kilograms	7	
HARVESTING COSTS:	$ per hectare	¢ per kilogram
Labor:		
Operator	308	3.3
Hired	3,477	37.2
Total	3,785	40.5
Tractor (oper. and fixed)	96	1.0
Machines (oper. and fixed)	39	.4
Containers	1,955	21.0
TOTAL	**5,875**	**62.9**

[a]Three cooperators in Niagara, three in Norfolk, two in the Central and Eastern area.

[b]Average yield reported by eight cooperators with commercially harvested crops.

Appendix Table 4.—Strawberry Harvesting Costs, Pick-Your-Own Harvesting, Ontario, 1982

	All Areas	
Number of cooperators[a]	7	
Yield per hectare[b], kilograms	8,384	
Hectares harvested per farm	5.60	
Labor, hours per hectare:		
Operator	42	
Hired	177	
Total	219	
HARVESTING COSTS:	**$ per hectare**	**¢ per kilogram**
Labor:		
Operator	266	3.2
Hired	691	8.2
Total	957	11.4
Tractor (oper. and fixed)	103	1.2
Machines (oper. and fixed)	75	.9
Advertising	338	4.1
Other[c]	51	.6
TOTAL	**1,524**	**18.2**

[a]Two cooperators in Norfolk and five cooperators in the Central and Eastern Area.

[b]Average yield reported by seven cooperators with PYO harvested crops.

[c]This cost represents a small quantity of containers supplied to customers.

Appendix Table 5.--Strawberry Renovating Costs per Hectare, Ontario, 1982

	All Areas	Niagara	Norfolk	Central & Eastern Areas
Number of cooperators	19	5	5	9
Hectares renovated per farm	4.05	2.45	1.55	6.32
Hours per hectare:				
Labor	80	249	68	45
Tractor	19	29	28	15
OPERATING COSTS:		- dollars per nectare -		
Hired labor	235	698	110	153
Tractor & machine (fuel, oil, repairs)	135	154	173	125
Custom work	11	71	0	0
Materials:				
Fertilizer	148	305	88	121
Manure	15	0	0	21
Herbicides	74	111	69	67
Straw	402	183	210	475
Other	15	0	4	20
Total	654	599	371	704
Interest on operating capital	104	158	54	91
TOTAL	1,139	1,680	708	1,073
FIXED COSTS:				
Operator labor	70	95	183	49
Tractor & machine (dep'n interest, insurance, housing)	208	202	182	213
TOTAL	278	297	365	262
TOTAL COST PER HECTARE	1,417	1,977	1,073	1,335

Appendix Table 6.--Cost of Establishing, Growing, Harvesting and Renovating Strawberries per Hectare, Ontario, 1982

	All Areas	Niagara	Norfolk	Central & Eastern Areas
COSTS:		- dollars per hectare -		
Establishment[a] (1/4 of cost)	1,253	1,976	1,011	1,050
Pre-harvest	929	1,051	616	949
Land, management, other overhead ...	1,173	2,034	998	1,016
Renovating[a] (3/4 of cost).....	1,063	1,482	805	1,001
Total (except harvesting).....	4,418	6,543	3,430	4,016
		- kilograms per hectare -		
Yield[b]	8,342	8,795	8,194	8,269
COSTS:		- cents per kilogram -		
All costs except harvesting	52.9	74.4	41.8	48.6
Commercial harvesting	62.9	62.9	62.9	62.9
Total	115.8	137.3	104.7	111.5
All costs except harvesting	52.9	74.4	41.8	48.6
PYO harvesting	18.2	18.2	18.2	18.2
Total	71.1	92.6	60.0	66.8

[a]Cooperating growers normally averaged four harvesting years following planting. Hence, establishment costs were spread over four production years. Fields were renovated three times during the four year production cycle.

[b]Average 1982 yields reported by cooperators for all crops under study in each area.

Appendix Table 7.--Strawberry Establishment Budget per Hectare and per Acre, Ontario, 1984

	Unit Cost	Cost per ha	Cost per ac.
OPERATING COSTS:		- dollars -	
Hired labor, 168 h/ha	4.00	672	272
Materials:			
Fertilizer, 34-0-0, 80 kg/ha	244.00	20	8
10-20-20, 600 kg/ha	258.00	155	63
Manure 45 t/ha	8.00	360	146
Green manure seed		25	10
Plants, 12,355/ha	45.00	556	225
Plant starter 8 kg/ha	2.10	17	7
Herbicide, Dalapon 13 kg/ha	5.55	72	29
Sinbar 1.15 kg/ha	65.00	75	30
Fungicide, Cyprex 65 WP, 1.75 kg/ha	18.05	32	13
Insecticide, Guthion 50 WP, 1.5 kg/ha	15.90	24	10
Fumigant, Vorlex 56 L/ha	5.52	309	125
Straw, 7.4 t/ha,	50.00	370	150
Total		2,015	816
Tractor and machine operating costs		252	102
Custom application, fumigant		25	10
Interest operating capital (12.5% for 15 mos.)		463	187
TOTAL		3,427	1,387
FIXED COSTS:			
Operator labor: 49.4 h/ha	6.50	321	130
Tractor and machine fixed costs		529	214
Interest land $5,000/ha, (6.5% for 2 years)		650	263
Real estate taxes (2 years)[a]		70	28
Other overhead		247	100
TOTAL		1,817	735
TOTAL COST		5,244	2,122

[a]Land costs have been included for two years on the assumption that the field is being prepared for strawberry production during the year prior to planting.

Appendix Table 8.--Budgeted Strawberry Pre-harvest and Harvest Costs[a] per Hectare and per Acre, Commercial Harvesting, Ontario, 1984

	Unit Cost	Cost per ha	Cost per ac.
OPERATING COSTS:		- dollars -	
Hired labor:			
Pre-harvest, 29.6 h/ha	4.00	118	48
Harvest, 1100 h/ha	3.00[b]	3,300	1,335
Materials:			
Fungicide:			
Cyprex 65 WP, 1.75 kg/ha	18.05	32	13
Captan 50 WP (5X) 6.75 kg/ha	5.65	191	77
Insecticide:			
Malathion 25 WP (2X) 6.75 kg/ha	4.45	60	24
Thiodan 50 WP (2X) 2.25 kg/ha	15.70	71	29
Containers: 14,827 units/ha	.14	2,076	840
Total		2,430	983
Tractor and machine		232	94
Interest operating capital[c]		22	9
TOTAL		6,102	2,469
FIXED COSTS:			
Operator labor:			
Pre-harvest, 14.8 h/ha	6.50	96	39
Harvest, 44.5 h/ha	6.50	289	117
Tractor and machine		365	148
Interest land $5,000/ha	6.5%	325	131
Taxes		35	14
Management allowance (5% of gross sales)		704	285
Other overhead		296	120
TOTAL		2,110	854
TOTAL COST		8,212	3,323

[a]Based on a harvested yield of 6,000 quarts per acre (8407 kg/ha).

[b]Estimated hourly rate equivalent to going rate for piece work.

[c]Calculated on pre-harvest costs only - 12.5% for three months.

Appendix Table 9.--Budgeted Strawberry Pre-harvest and Harvest Costs[a] per Hectare and per Acre, PYO Harvesting, Ontario, 1984

	Unit Cost	Cost per ha	Cost per ac.
OPERATING COSTS:		- dollars -	
Hired labor:			
Pre-harvest, 29.6 h/ha	4.00	118	48
Harvest, 178 h/ha	4.00	712	288
Materials:			
Fungicides:			
Cyprex 65 WP, 1.75 kg/ha	18.05	32	13
Captan 50 WP (5X) 6.75 kg/ha	5.65	191	77
Insecticide:			
Malathion 25 WP (2X) 6.75 kg/ha	4.45	60	24
Thiodan 50 WP (2X) 2.25 kg/ha	15.70	71	29
Total		354	143
Tractor and machine		232	94
Interest operating capital[b]		22	9
TOTAL		1,438	582
FIXED COSTS:			
Operator labor:			
Pre-harvest, 14.8 h/ha	6.50	96	39
Harvest, 44.5 h/ha	6.50	289	117
Tractor and machine		365	148
Interest land $5,000/ha $2,023/ac., %	6.50	325	131
Taxes		35	14
Advertising		346	140
Management allowance (5% of gross sales)		481	195
Other overhead		296	120
TOTAL		2,233	904
TOTAL COST		3,671	1,486

[a]Based on a harvested yield of 6,000 quarts per acre (8407 kg/ha).

[b]Calculated on pre-harvest costs only - 12.5% for three months.

Appendix Table 10.--Budgeted Strawberry Renovation Costs per Hectare and per Acre, Ontario, 1984

	Unit Cost	Cost per ha.	Cost per ac.
OPERATING COSTS:		- dollars -	
Hired labor: 66.7 h/ha	4.00	267	108
Materials:			
Fertilizer, 34-0-0, 100 kg/ha	244.00	24	10
10-20-20, 500 kg/ha	258.00	129	52
Herbicides, 2, 4-D, 2.2 /ha	3.10	7	3
Sinbar, .75 kg/ha	65.00	49	20
Straw, 7.4 t/ha	50.00	370	150
Total		579	235
Tractor and machine		152	62
Interest operating capital (12.5% for 10 mos)		104	42
TOTAL		1,102	447
FIXED COSTS:			
Operator labor: 12.4 h/ha	6.50	80	32
Tractor and machine		188	76
TOTAL		268	108
TOTAL COST		1,370	555

Appendix Table 11.--Budgeted Strawberry Costs and Returns, Commercial and PYO Harvesting, Ontario, 1984

	Ontario			
COMMERCIAL HARVESTING	$/ha	$/kg	$/acre	$/qt.
GROSS RETURNS:				
8407 kg (6,000 quarts)	14,085	1.68	5,700	.95
COSTS:				
Establishment (1/4 of cost)[a]	1,311	0.16	531	.09
Pre-harvest and harvest	8,212	0.97	3,323	.55
Renovating (3/4 of cost)[a]	1,028	0.12	416	.07
TOTAL	10,551	1.25	4,270	.71
NET RETURNS	3,534	0.43	1,430	.24
PICK-YOUR-OWN HARVESTING				
GROSS RETURNS:				
8407 kg (6,000 quarts)	9,637	1.15	3,900	.65
COSTS:				
Establishment (1/4 of cost)[a]	1,311	0.16	531	.09
Pre-harvest and harvest	3,671	0.44	1,486	.25
Renovating (3/4 of cost)[a]	1,028	0.12	416	.07
TOTAL	6,010	0.72	2,433	.41
NET RETURNS	3,627	0.43	1,467	.24

[a]The budgeted costs shown in this table are based on a system in which there are four harvesting years following the planting year. Hence, establishment costs are spread over four production years. On the average, a field will be renovated three times during the four year cycle before it is taken out of production.

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